L1: Entry 1 of 2   File: USPT   Dec 17, 1996

US-PAT-NO: 5586310
DOCUMENT-IDENTIFIER: US 5586310 A
** See image for Certificate of Correction **

TITLE: System for distributed database replicated read with exclusive central server transfer of primary copies

DATE-ISSUED: December 17, 1996

INVENTOR-INFORMATION:
NAME	CITY	STATE	ZIP CODE	COUNTRY
Sharman; Geoffrey	Winchester			GB

ASSIGNEE-INFORMATION:
NAME	CITY	STATE	ZIP CODE	COUNTRY	TYPE CODE
International Business Machines Corporation	Armonk	NY			02

APPL-NO: 08/ 158119   [PALM]
DATE FILED: November 23, 1993

FOREIGN-APPL-PRIORITY-DATA:
COUNTRY	APPL-NO	APPL-DATE
GB	9225455	December 4, 1992

INT-CL: [06] G06 F 17/30

US-CL-ISSUED: 395/600; 395/650, 395/800
US-CL-CURRENT: 707/10; 712/28

FIELD-OF-SEARCH: 395/600, 395/800, 395/650, 395/200, 395/725, 379/269

PRIOR-ART-DISCLOSED:

U.S. PATENT DOCUMENTS

▓ Search Selected ▓   ▓ Search ALL ▓   ▓ Clear ▓

	PAT-NO	ISSUE-DATE	PATENTEE-NAME	US-CL
☐	4432057	February 1984	Daniell et al.	364/300
☐	4620276	October 1986	Daniell et al.	364/200
☐	4714992	December 1987	Gladney et al.	364/200
	4714996	December 1987	Gladney et al.	364/300

☐

☐   <u>4853843</u>   August 1989   Eckland   395/600

☐   <u>5261094</u>   November 1993   Everson et al.   395/600

FOREIGN PATENT DOCUMENTS

FOREIGN-PAT-NO	PUBN-DATE	COUNTRY	US-CL
204449A2	December 1986	EP	

OTHER PUBLICATIONS

Stumm et al., "Algorithms Implementing Distributed Shared Memory", Computer, vol. 23, No. 5, May, 1990, pp. 54-64.
Stumm et al., "Fault Tolerant Distributed Shared Memory Algorithms", Proceedings of the Second IEEE Symposium on Parallel and Distributed Processing 1990, 9-13 Dec. 1990, Dallas Texas, pp. 719-724.
Michael Nelson, "Network Transparency", UNIX Review, vol. 8, No. 11, Nov., 1990, pp. 66-71.
Hilal et al., "Designing Large Electronic Mail Systems", 8th International Conference on Distributed Systems, 13-17 Jun., 1988, San Jose, Ca., pp. 402-409.
Russell et al., "Distribution+Persistence=Global Virtual Memory", Proceedings of the Second International Workshop on Object Orientation in Operating Systems, 24-25 Sep. 1992, Dourdon, France, pp. 96-99.
Caughey et al., "Implementing Fault -Tolerant Object Systems on Distributed Memory Multiprocessors", Proceedings of the Second International Workshop on Object Orientation in Operating Systems, 24-25 Sep. 1992, Dourdon, France, pp. 172-179.
Sarin et al., "A Flexible Algorithm For Replicated Directory Management", 9th International Conference on Distributed Computing Systems, 5-8 Jun. 1989, Newport Beach, Ca, pp. 456-464.
C. H. C. Leung et al, "Analysis and Optimisation of Data Currency and Consistency in Replicated Distributed Databases," The Computer Journal, vol. 28, No. 5, 1985 pp. 518-523.
E. Babb, "Implementing a Relational Database by Means of Specialized Hardware," ACM Trans. Database Systems, vol. 4, No. 1, Mar. 1979, pp. 1-29.
C. J. Date "What is a Distributed Database System, Part I," The Relational Journal, Issue 1, Jun. 1987.
C. J. Date "What is a Distributed Database System, Part II," The Relational Journal, Issue 2, Oct. 1987.
S. H. Son, "Replicated Data Management in Distributed Database Systems" Sigmod Record, vol. 17, No. 4, Dec. 1988.
B. Lindsay et al, "A Snapshot Differential Refresh Algorithm," IBM Research Report, RJ 4992, Jan. 1986.
A. Scherr, "Structures for Networks of Systems," IBM Systems Journal, vol. 26, No. 1, 1987.
U. Inoue et al., "RINDA-A Relational Database Processor for Non-Indexed Queries", 1st International Symp. Darabase Systems for Advanced Applications, Apr. 1989, pp. 382-386. in Japanese Abstract Considered.
Y. Huang et al., "A Competitive Dynamic Data Replication Algorithm", IEEE Conf. No. 9, Apr. 19, 1993, pp. 310-317.
B. Ciciani et al., "Analysis of Concurrency-Coherency Control Protocols for Distributed Transaction Processing Systems With Regional Locality", IEEE Transactions on Software Engineering, vol. 18, No. 10, Oct. 1, 1992, pp. 899-914.

ART-UNIT: 237

PRIMARY-EXAMINER: Amsbury; Wayne

ASSISTANT-EXAMINER: Lintz; Paul R.

ATTY-AGENT-FIRM: Klein; Esther E.

ABSTRACT:

When an update is made to a data record in a distributed, replicated data processing system, the update is first applied to a primary copy of the data record before being applied to any other copy to ensure that updates are applied in the correct time sequence. Apparatus and a method of operating a distributed data processing system is provided in which responsibility for the primary copy is transferable to whichever processor in the system requires most frequent update access, providing improved performance and availability of data. The primary copy may be partitioned and distributed across the system.

7 Claims, 8 Drawing figures

☐ Generate Collection   Print

L2: Entry 1 of 2   File: USPT   Nov 18, 1997

US-PAT-NO: 5689706
DOCUMENT-IDENTIFIER: US 5689706 A

TITLE: Distributed systems with replicated files

DATE-ISSUED: November 18, 1997

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Rao; Chung-Hwa Herman	Edison	NJ		
Skarra; Andrea H.	Chatham	NJ		

ASSIGNEE-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY	TYPE CODE
Lucent Technologies Inc.	Murray Hill	NJ			02

APPL-NO: 08/ 728580   [PALM]
DATE FILED: October 10, 1996

PARENT-CASE:
CROSS-REFERENCE TO RELATED APPLICATION This application is a continuation of
application Ser. No. 08/282,683, filed on Jul. 29, 1994, now abandoned which is a
continuation-in-part of Ser. No. 08/080,037, filed Jun. 18, 1993, now U.S. Pat. No.
5,572,709.

INT-CL: [06] G06 F 17/30

US-CL-ISSUED: 395/617; 395/610, 395/619
US-CL-CURRENT: 707/201; 707/10, 707/203

FIELD-OF-SEARCH: 395/600, 395/650, 395/700, 395/200.14, 395/477, 395/479, 395/480,
395/497.01, 395/726, 395/727, 395/730, 395/610, 395/617, 395/619

PRIOR-ART-DISCLOSED:

U.S. PATENT DOCUMENTS

Search Selected   Search ALL   Clear

	PAT-NO	ISSUE-DATE	PATENTEE-NAME	US-CL
☐	5434994	July 1995	Shaheen et al.	395/600
☐	5452448	September 1995	Sakuraba et al.	395/699

OTHER PUBLICATIONS

. A. Skarra, "Using OS Locking Services to Implement a DBMS: An Experience Report", Proceedings of Summer USENIX Conference, Jun. 6-10, 1994.
A. Skarra, "SLEVE: Semantic Locking for EVEnt Synchronization", Proceedings of Ninth International Conf. on Data Engineering, IEEE Computer Society Press, Apr. 19-23, 1993.
A. Skarra, H. Rao, "A File System Interface for Concurrent Access", Proceedings of Sixth ACM SIGOPS European Workshop, to be published Sep. 12-14, 1994, pp. 1-6.
A. Bhide, E. Elnozahy, S.P. Morgan, "A Highly Available Network File Server", USENIX--Winter '91, Dallas, TX, pp. 199-205.
R.G. Guy, J.S. Heidemanan, W. Mak, T.W. Page, G.J. Popek, D. Rothmeier, "Implementation of the Ficus Replicated File System", USENIX Summer Conference, Jun. 11-15, 1990, Anaheim, CA, pp. 63-71.
A. Hisgen, A. Birrell, T. Mann, M. Schroeder, G. Swart, "Availability and Consistency Tradeoffs in the Echo Distributed File System", Proceedings of the Second Workshop on Workstation Operating Systems, Pacific Grove, CA, Sep. 27-29, 1989, pp.1-6.
A. Bhide, S.P. Morgan, E. Elnozahy, A. Siegel, "Comparison of Two Approaches to Build Reliable Distributed File Servers", IEEE, 1991, pp. 616-623.
E. Levy, A. Silberschatz, "Distributed File Systems: Concepts and Examples", ACM Computer Surveys, vol. 22, No. 4, Dec. 1990, pp. 321-374.
M. Saryanarayanan, "A Survey of Distributed File Systems", Annual Review of Computer Science, vol. 4, 1989, pp. 1-26.
L., "File Servers for Network-Based Distributed Systems", Computing Surveys, vol. 16, No. 4, Dec. 1984, pp. 353-398.

ART-UNIT: 237

PRIMARY-EXAMINER: Kulik; Paul V.

ATTY-AGENT-FIRM: Nelson; G. E. Penrod; J. R.

ABSTRACT:

Techniques for providing replicated files in a distributed system. A replicated file has a set of copies in components of the distributed system. Operations on the copies have the same semantics for the application processes accessing them as operations on a single copy of a file in a system where all processes execute on the same host. These semantics are achieved by means of a distributed synchronization system. Each replicated file has a read token and a write token. In order for an application process to perform an operation on a replicated file, the token required for the operation must be in the process's host and the process must have access to the token. Tokens are passed between hosts by token servers which respond to requests for tokens from application processes and from other token servers. The techniques are implemented using a library which replaces a standard I/O library, and may thus be employed without modification to hardware or the operating system.

4 Claims, 17 Drawing figures

Previous Doc   Next Doc   Go to Doc#

L3: Entry 1 of 2   File: USPT   Jul 18, 1995

US-PAT-NO: 5434994
DOCUMENT-IDENTIFIER: US 5434994 A

TITLE: System and method for maintaining replicated data coherency in a data
processing system

DATE-ISSUED: July 18, 1995

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Shaheen; Amal A.	Austin	TX		
Yellepeddy; Krishna K.	Austin	TX		

ASSIGNEE-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY	TYPE CODE
International Business Machines Corporation	Armonk	NY			02

APPL-NO: 08/ 247422   [PALM]
DATE FILED: May 23, 1994

INT-CL: [06] G06 F 7/20

US-CL-ISSUED: 395/500; 395/200, 395/600
US-CL-CURRENT: 709/223; 707/203, 709/203, 711/141, 714/10

FIELD-OF-SEARCH: 395/200, 395/500, 395/600

PRIOR-ART-DISCLOSED:

U.S. PATENT DOCUMENTS

Search Selected   Search ALL   Clear

	PAT-NO	ISSUE-DATE	PATENTEE-NAME	US-CL
☐	4432057	February 1984	Daniell et al.	395/725
☐	4562539	December 1985	Vince	395/200
☐	5261094	November 1993	Everson et al.	395/600
☐	5274789	December 1993	Costa et al.	395/425
☐	5333265	July 1994	Orimo et al.	395/200

OTHER PUBLICATIONS

·Chu et al, "Tutorial-Centralized and Distributed Data Base Systems", IEEE Computer Society, P.531-544, Oct. 1-4, 1979.

ART-UNIT: 235

PRIMARY-EXAMINER: Lall; Parshuiam S.

ASSISTANT-EXAMINER: Lintsai; Paulina

ATTY-AGENT-FIRM: Walker; Mark S.

ABSTRACT:

A system and method for maintaining data coherency in a system in which data is replicated on two or more servers. Each server is able to update the data replica present on the server. Updates are logged for each server. Reconciliation of server data replicas is aggressively initiated upon the occurrence of predefined events. These events include arrival at a scheduled time, a request for data by a client system, server and network failure recovery. Reconciliation is managed by a coordinator server selected to ensure that at most one coordinator server per network partition is selected. Logged updates are merged and transmitted to each server containing a data replica. The logged updates are applied unless a conflict is detected. Conflicts are collected and distributed for resolution. Reconciliation is managed between servers without regard to operating system or physical file system type.

11 Claims, 7 Drawing figures

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User Searches L4: Entry 1 of 2   File: USPT   Oct 31, 1989
Preferences

Logout PATENT-NO: 4878167
DOCUMENT-IDENTIFIER: US 4878167 A
** See image for **Certificate of Correction** **

TITLE: Method for managing reuse of hard log space by mapping log data during state changes and discarding the log data

DATE-ISSUED: October 31, 1989

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Kapulka; Kenneth M.	San Jose	CA		
Rader; Holly A.	Morgan Hill	CA		
Strickland; Jimmy P.	Saratoga	CA		

ASSIGNEE-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY	TYPE CODE
International Business Machines Corporation	Armonk	NY			02

APPL-NO: 06/ 880387   [PALM]
DATE FILED: June 30, 1986

INT-CL: [04] G06F 15/00, G06F 11/30

US-CL-ISSUED: 364/200; 364/300, 364/222.81, 364/267, 364/282.1
US-CL-CURRENT: 714/16

FIELD-OF-SEARCH: 364/2MSFile, 364/9MSFile, 364/300, 371/12, 371/13

PRIOR-ART-DISCLOSED:

U.S. PATENT DOCUMENTS

Search Selected Search ALL Clear

	PAT-NO	ISSUE-DATE	PATENTEE-NAME	US-CL
☐	4498145	February 1985	Baker et al.	364/900
☐	4507751	March 1985	Gawhick et al.	364/900
☐	4648031	March 1987	Jenner	364/200

OTHER PUBLICATIONS

Crus et al., "Incremental Data Base Image Copy", IBM TDB, vol. 25, No. 7B, Dec. 1982, pp. 3730-3732.
Jenner, "Log Scopes of Interest ", IBM TDB, vol. 25, No. 7A, Dec. 1982, pp. 3270-3273.
Kim et al., "Data Consistency and Exchange Among Nested Transactions in a Database", IBM TDB, vol. 27, No. 1B, June 1984, pp. 879-881.

ART-UNIT: 232

PRIMARY-EXAMINER: Williams, Jr.; Archie E.

ASSISTANT-EXAMINER: Lee; Thomas L.

ATTY-AGENT-FIRM: Brodie; R. Bruce Garnett; Pryor A.

ABSTRACT:

A method for writing tagged (partitioned and classified) records from a first log stream to multiple recovery streams and discarding same from said first stream at the termination of the unit of recovery in a transaction-oriented system to permit first log stream reuse.

5 Claims, 25 Drawing figures

● ●

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L5: Entry 1 of 2   File: USPT   May 25, 1999

US-PAT-NO: 5907848
DOCUMENT-IDENTIFIER: US 5907848 A

TITLE: Method and system for defining transactions from a database log

DATE-ISSUED: May 25, 1999

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Zaiken; Kenneth A.	Rochester	MN		
Dehond; Guy	Hoboken-Antwerp			BE
Boggs; Dan	Chicago	IL		

ASSIGNEE-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY	TYPE CODE
Lakeview Technology, Inc.	Oak Brook	IL			02

APPL-NO: 08/ 818513   [PALM]
DATE FILED: March 14, 1997

INT-CL: [06] G06 F 17/30

US-CL-ISSUED: 707/202; 707/1, 707/2, 707/8, 707/10, 707/101, 707/103, 707/201, 707/203, 707/204, 707/205, 705/4
US-CL-CURRENT: 707/202; 705/4, 707/1, 707/10, 707/101, 707/2, 707/201, 707/203, 707/204, 707/205, 707/8

FIELD-OF-SEARCH: 707/1, 707/2, 707/8, 707/10, 707/101, 707/103, 707/201, 707/202, 707/203, 707/204, 707/205, 707/6, 707/9, 707/206, 705/4, 705/40, 711/152, 711/168, 711/113, 711/1-7, 711/9, 370/231, 701/2, 1/1

PRIOR-ART-DISCLOSED:

U.S. PATENT DOCUMENTS

▓ Search Selected ▓   ▓ Search ALL ▓   ▓ Clear ▓

	PAT-NO	ISSUE-DATE	PATENTEE-NAME	US-CL
☐	5193162	March 1993	Bordsen	711/152
☐	5303368	April 1994	Kotaki	707/8
☐	5680614	October 1997	Bakuya	107/103
☐	5704044	December 1997	Tarter	705/4

□	5712987	January 1998	Waits	1/1
□	5729594	March 1998	Klingman	379/93.12
□	5734883	March 1998	Umen	1/1

ART-UNIT: 271

PRIMARY-EXAMINER: Black; Thomas G.

ASSISTANT-EXAMINER: Mizrahi; Diane D.

ATTY-AGENT-FIRM: Baker & McKenzie

ABSTRACT:

A method and system of providing external transaction protection for a database using the database log or journal. The method involves creating a set of transaction templates which define transactions, using the templates to determine whether each record or entry in the journal represent part of a transaction, and maintaining a set of index file indicating transactions in progress. Each transaction template contains a number of filenames identifying files in the database affected during the transaction defined by the template. Each template also contains a key value representing one or more data fields in the database included in every action performed during the transaction. For each entry in the journal, a determination is made whether the entry belongs to a transaction based on the data fields represented in the entry and the key values associated with the templates. The index files are maintained by creating a new index file for each new transaction, adding data to a given index file from a journal entry which belongs to the transaction associated with the given index file, and deleting index files when transactions with which they are associated are complete. In the event the database is damaged, existing index files are used to determine which transactions did not complete before the database was damaged. The actions which were completed may be rolled back.

28 Claims, 9 Drawing figures

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L6: Entry 1 of 2   File: USPT   Jun 10, 1997

US-PAT-NO: 5638508
DOCUMENT-IDENTIFIER: US 5638508 A

TITLE: Method and a system for processing a log record

DATE-ISSUED: June 10, 1997

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Kanai; Sadasaburoh	Yokohama			JP
Tsuboi; Toshiaki	Kawasaki			JP
Kitajima; Hiroyuki	Yokohama			JP
Sumiyoshi; Takashi	Yokohama			JP

ASSIGNEE-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY	TYPE CODE
Hitachi, Ltd.	Tokyo			JP	03
Hitachi Micro Computer Engineering, Ltd.	Tokyo			JP	03

APPL-NO: 08/ 208044   [PALM]
DATE FILED: March 9, 1994

PARENT-CASE:
This application is a continuation of application Ser. No. 07/684,145, filed on
Apr. 11, 1991 which is a continuation of application Ser. No. 07/219,264, filed on
Jul. 15, 1988 both now abandoned.

FOREIGN-APPL-PRIORITY-DATA:

COUNTRY	APPL-NO	APPL-DATE
JP	62-178229	July 17, 1987

INT-CL: [06] G06 F 12/16

US-CL-ISSUED: 395/182.18; 395/440, 395/446
US-CL-CURRENT: 714/20; 711/113, 711/119

FIELD-OF-SEARCH: 395/425, 395/600, 395/575, 395/182.18, 395/182.13, 395/440,
395/446, 395/456, 395/460, 395/462, 395/486

PRIOR-ART-DISCLOSED:

U.S. PATENT DOCUMENTS

Search Selected   Search ALL   Clear

	PAT-NO	ISSUE-DATE	PATENTEE-NAME	US-CL
☐	4507751	March 1985	Gawlick et al.	364/900
☐	4521847	June 1985	Ziehm et al.	371/16.5
☐	4648031	March 1987	Jenner	364/200
☐	4868744	September 1989	Reinsch et al.	364/200
☐	4875155	October 1989	Iskiyan et al.	395/425
☐	4878167	October 1989	Kapulka et al.	364/200
☐	5043871	August 1991	Nishigaki et al.	395/600

FOREIGN PATENT DOCUMENTS

FOREIGN-PAT-NO	PUBN-DATE	COUNTRY	US-CL
0062144	March 1986	JP	
0070645	April 1986	JP	
0014242	January 1987	JP	

OTHER PUBLICATIONS

Fernandez, E, et al., Database Security and Integrity, 1981, Addison-Wesley
Publishing Co, pp. 134-133.
Date, C.J, An Introduction to Database Systems, 1983, Addison-Wesley Publishing Co,
pp. 1-24.

ART-UNIT: 232

PRIMARY-EXAMINER: Chan; Eddie P.

ASSISTANT-EXAMINER: Ellis; Kevin L.

ATTY-AGENT-FIRM: Antonelli, Terry, Stout & Kraus, LLP

ABSTRACT:

A data processing system for processing transactions, wherein a log record to be
used for recovery of the system is written into a log file for system recovery in
synchronism with the end of a transaction, and log records other than resident
information are is written for a plurality of transactions into a log file for
archives.

9 Claims, 5 Drawing figures